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SOME NEW INJURIOUS PHYTOPHAGA FROM BRITISH EAST AFRICA (COLEOPT.)

By G. E. Bryant, F.R.E.S.

(*Entomologist, Imperial Institute of Entomology.*)

Eumolpinae.

Syagrus rosae sp. n. (Fig. 1, ♀.)

Black or fulvous, head finely punctured, prothorax impunctate, except at the margins, elytra strongly punctate-striate, femora dentate. ♂ entirely fulvous. ♀ entirely black or with the prothorax and shoulders black. L. 3–4 mm. *Head* fulvous, finely punctured on the vertex, the clypeus more strongly but not very closely punctured. Antennae long and slender, fulvous, with the five apical joints tinged with fuscous, the two basal joints more swollen, the remaining joints elongate and slender. Prothorax subcylindrical,

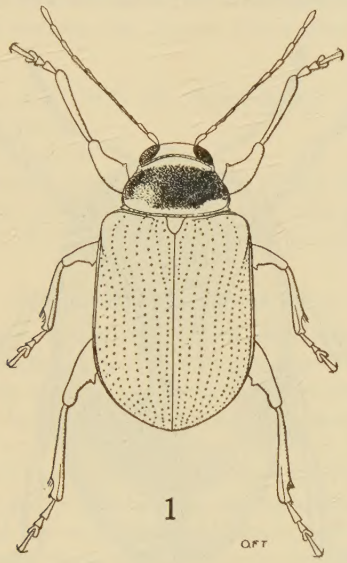

Fig. 1.—*S. rosae* sp. n. ♀.

slightly narrowed and depressed in front, impunctate, except for a few fine punctures along the margins, fulvous in ♂, black in ♀ with the anterior and posterior margins fulvous. Scutellum triangular, fulvous, impunctate. Elytra fulvous, subcylindrical, strongly punctate-striate, punctures finer towards the apex. ♀ entirely black or with traces of black at the shoulders. Legs fulvous, all the femora dentate, the middle and posterior tibiae notched at the apex. Underside fulvous, impunctate, with the ventral segments about equal.

Uganda : Kampala, xii.1920 (*H. Hargreaves*), on rose flower (7); Uganda : Kampala, x.1929 (*H. Hargreaves*), on rose flower; Uganda : Kampala, v.1927 (*G. L. R. Hancock*), feeding on bract of cotton boll (3); Uganda : Lake Victoria, Bukakata (*G. A. K. Marshall*), 2.x.1929 (2); Uganda : Entebbe, x.1929 (*G. A. K. Marshall*) (1).

Type in the British Museum.

Closely allied to *S. mashonanus* Jac., but differs in the margins of the prothorax being finely punctured, and in the legs not having the knees and tarsal joints black.

Forwarded by Messrs. Hargreaves and Hancock and stated to be damaging roses and cotton.

HALTICINAE.

Cercyonia quadrinotata sp. n. (Fig. 2.)

Elliptical, convex, greenish-blue, with four large flavus patches on the elytra, the basal joints of the antennae, tibiae, tarsi, coxae and abdomen flavus; prothorax finely punctured, the elytra finely punctate-striate. L. 2·50–3 mm. *Head* greenish-blue, very finely punctured, the labrum black and impunctate. Antennae extending a little beyond the base of the elytra, flavus, with the five terminal joints tinged with fuscous, the first joint the broadest, about equal to the 2nd and 3rd together, the 4th to the 10th about equal to each other, the 11th longer and pointed, the seven terminal joints slightly pubescent. Prothorax blue-green, finely and evenly punctured, very transverse and strongly contracted in front,

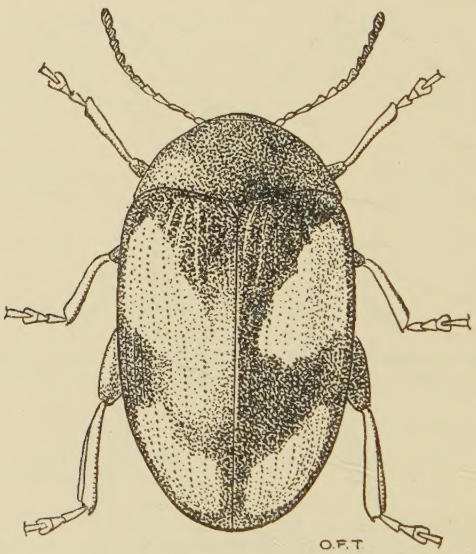

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FIG. 2.—*C. quadrinotata* sp. n.

the sides feebly margined. Scutellum blue-green, triangular, impunctate. Elytra blue-green, with four large flavus patches, subcylindrical, rounded at the apex, finely punctate-striate, more feebly towards the apex, with the intervals finely punctured, the basal patch larger and more irregular than the apical one. Underside of the sternum tinged with blue-green, metasternum finely punctured, the ventral segments of the abdomen flavus, the first segment strongly punctured. Male with the apical segment strongly notched, and a row of four strong punctures along the posterior margin. Legs with the femora metallic blue-green, glabrous, the tibiae and tarsi flavus, the hind tibiae armed with a small spine at the apex.

Uganda: Kampala, 10.iv.1934 (*H. Hargreaves*), D.1185, 11 specimens. On *Bersama* sp. (Melianthaceae).

Type in the British Museum.

Allied in size and build to *C. usambarica* Wse., but differs in pattern.

Epitrix torvi sp. n.

Black, the antennae, tibiae and tarsi flavus; prothorax finely and closely punctured, the base with a very faint trace of a transverse depression; elytra finely punctate-striate, the interstices longitudinally pubescent. L. 1·50 mm. Head shining black, impunctate, with the exception of a few strong punctures near the eyes, obliquely grooved between the eyes; antennae extending to the middle of the elytra, flavus, the four apical joints tinged with fuscous, the two basal joints stouter than the five following, which are about equal to each other, the four terminal joints slightly thickened and more pubescent. Prothorax dull black, transverse, the sides slightly rounded and narrowly margined, the anterior angles oblique, the surface finely and closely punctured, only a faint trace of a transverse sulcus at the base. Scutellum black, transverse and impunctate. Elytra dull black, closely and finely punctate-striate, the interstices with rows of short white pubescence forming very distinct rows. Legs with the femora fuscous, tibiae and tarsi flavus. Underside black, the first ventral segment of the abdomen the longest, 2 to 4 about equal, sparingly pubescent and punctured.

Uganda: Kampala, 4.xii.1933 (*H. Hargreaves*). Reported in numbers on young leaf of *Solanum* ? *torvum*.

Type in the British Museum.

Allied to *E. integricollis* Jac., but differs in not having the perpendicular groove at the base of the prothorax, the 3rd and 4th joints of the antennae are not very small, and the rows of white pubescence are much more defined on the elytra.

Jamesonia semicuprea sp. n.

Elongate, black, the head and prothorax cupreus, the elytra violet-blue or greenish-blue, antennae and legs black, prothorax not closely punctured, the elytra more closely and rugosely punctured. L. 4–4½ mm. *Head* cupreus with the frons black, a longitudinal carina in front of the insertion of the antennae, a well-marked transverse impression between the eyes, the base of the head with a few well-defined scattered punctures. Antennae black, extending just beyond the middle of the elytra, the three basal joints glabrous, the remaining eight clothed with very fine grey pubescence, the basal joint the stoutest, about equal to the 2nd and 3rd together, which are very short and rounded, and equal to each other, the 4th the longest, about equal to the three basal, the seven terminal joints about equal to each other, and subtriangular. Prothorax cupreus, transverse, with fine but scattered punctures, the sides rounded and slightly contracted in front, with the anterior angles somewhat recurved. Elytra elongate, convex, widest behind the middle, violet-blue or greenish-blue, closely and rugosely punctured. Legs black, the tibiae with a small flavus spine at their apex, claws appendiculate, flavus. Underside black. ♀ differs in the antennae being shorter and more slender, and the third segment is less rounded.

B.E. Africa: W. Aberdares, 1,000–1,100 ft., xi.1934 (*A. F. J. Gedye*), 2 ♂♂, 4 ♀♀. On *Helichrysum* sp. Associated with the Melyrid, *Hapalochrus semicupreus* Pic.

Type in the British Museum.

Superficially this species might be taken for a true *Haltica*, but it has most of the characters of *Jamesonia*, and I propose at present to refer it to this genus. It is the first entirely metallic-coloured species of the genus.

ON THE IDENTITY OF *APANTELES PALLIPES* REINHARD, WITH THE DESCRIPTION OF A NEW, CLOSELY RELATED, PALAEARCTIC SPECIES (HYM. BRAC.)

By D. S. Wilkinson, F.R.E.S.

(*Imperial Institute of Entomology.*)

For some considerable time now I have been aware that there are two, distinct, species of *Apanteles* that authors had determined, and still are determining, indiscriminately, as *Apanteles pallipes* Reinh. So close are these species that I was entirely unable to make out from the literature which of the two was to be accepted as the true *pallipes*, particularly since both are parasitic on Noctuids, and often the same Noctuids, and since their cocoon masses are almost identical. During a recent trip to Berlin, however, that I made expressly for the purpose of examining the types of the various, numerous German species of *Apanteles*, I was able to examine the Reinhard collection, through the courtesy of Dr. Bischoff, and finally to establish the identity of *pallipes*, as I also succeeded in doing for a great number of other palaearctic species. My work on the palaearctic species will, I hope, be presented as a whole, in monographic form, at a later date, and I should not have published anything at this time had it not been for the fact that the other species is, I consider, new to science : and a monographic revision such as I have in mind is by no means the ideal place in which to publish the description of a new species. This paper, then, is published only to establish the identity of Reinhard's species, *pallipes*, and to make available the name of this other, new species *reinhardi*, for my correspondents : and little if any note is taken here and at this time of the fairly numerous references to *pallipes* by a variety of writers the identity of whose material is unknown to me.

Reinhard originally described *pallipes* from an unstated number of specimens of both sexes bred " aus *Plusia gamma* von Rogenhofer in Wien, aus *Botys verticalis* von Brischke in Danzig." In the Reinhard collection in Berlin standing under the name *pallipes* were six specimens, all, as usual, labelled as type. One of these, a female, is labelled in addition " *Plusia gamma*. X," and another, also a female, with the " X " only, thus indicating doubtless that these two specimens belong to the same series. A third specimen, again a female, is labelled " aus *Botys verticalis*," and a fourth, also a female, with no further label other than those common to every specimen in the collection. These four specimens are conspecific, stand, as I have said, in the Reinhard collection under *pallipes*, bear labels naming both the hosts given by Reinhard, and agree perfectly with Reinhard's original description. I am quite convinced they should be accepted as the original material, or part of the original material, and I have so labelled them, selecting as the type of the species the first specimen to which I have made reference above since Reinhard recorded *P. gamma* first. These four specimens agree perfectly and in the minutest detail with the material as listed hereunder from which I have redescribed *pallipes*, and with which I myself compared them.

The fifth and sixth specimens in the Reinhard collection under *pallipes*, also both females, are only labelled " Wien," apart from the usual Museum labels. They are conspecific, and agree perfectly and in the minutest detail with the material as listed hereunder from which I have described *reinhardi*, and with which I myself compared them. I cannot accept these two as the real *pallipes*, in place of the other four that I have discussed above, not only because they do not altogether agree with Reinhard's description, notably in

the shape of the 2nd tergite and in various colour characters, but also because they are without host record. I am aware that it is this species, *reinhardi*, that almost all previous writers have determined as *pallipes*, even Reinhard himself (*fide* Fitch, 1881); but this, I submit, has no bearing on the subject.

Apanteles pallipes Reinh.

Apanteles pallipes, Reinhard, 1880, *Deuts. ent. Z.*, **24** : 366 (key), 1881, *loc. cit.*, **25** : 48. Fitch, 1881, *Entomologist*, **14** : 142 (*partim*).

♀♂. Black; scape, tegulae, all legs entirely (save for the black feet), and the ventrites of at least the basal half of the abdomen, red testaceous; palpi and tibial spurs pale; wings perhaps just faintly infumated evenly throughout, the setae coloured; wing-veins, stigma, and metacarp, brown or light brown evenly throughout, save that the veins in about the basal third of the wing are probably more rightly describable as testaceous; stigma uniformly opaque.

♀♂. *Head*: face and clypeus throughout minutely punctate (degree 2); facial depressions very obviously nearer to apex of clypeus than to the eyes; frons largely smooth; vertex exceedingly minutely punctate (degree 1); posterior ocelli obviously nearer to each other than to the eyes; flagellum in both ♀ and ♂ rather longer than combined length of thorax and abdomen together with twice the length of the head. *Thorax*: mesonotum minutely, regularly punctate (degree 3), apically the punctures becoming increasingly more minute and more widely placed so that in the apical third the mesonotum is only very minutely punctate (degree 2 or 1), while immediately anteriorly to the scutellar sulcus it is entirely smooth; disc of scutellum sparsely, exceedingly minutely punctate; propodeon across extreme base on each side with a smooth area, otherwise rugose, apically and in the apical angles coarsely and more strongly rugose, so coarsely that there are many smooth shining areas between the rugae, and throughout its length with a median longitudinal carina that is sometimes very well marked throughout but which is more commonly well marked (or sometimes even strong) only in the basal half, the apical half tending to become lost amongst or confounded with the rugosities in the apical portions of the propodeon. *Wings*: the transverse cubital angled with and equal to or a little longer than the 1st abscissa of the radial, these veins commonly much thickened at their point of junction; metacarp perhaps just longer than stigma. *Legs*: hind coxae minutely punctate (degree 2); the hind tibial spurs equal in length, or at least subequal, equal to or perhaps rather less than the length of the basal joint of the hind tarsus. *Abdomen* (fig. 1 *a*): 1st tergite in the basal third excavate, throughout the apical two-fifths tumescent, the whole slightly evenly turned over (the tumescent apex sometimes giving the impression that the apical half is strongly turned over), throughout with longitudinal carinulae, except for certain portions of the excavated base which are shining and more or less smooth, and except for the apical tumescence which is perhaps more rightly describable as longitudinally rugose, which rugosity is due doubtless to all the carinulae converging upon this much contracted portion; 2nd tergite longitudinally carinulate or even perhaps carinate, and the usual discal sulci entirely or more or less entirely wanting; 3rd tergite entirely smooth save for some exceedingly minute rugosities basally and save for quite widely placed minute punctation throughout the apical half or two-thirds in the ♀ and apical three-fourths in the ♂; succeeding tergites with the usual minute punctation; ventrites without median longitudinal suture; ovipositor equal in length to, and the sheaths shorter than, the basal joint of the hind tarsus; hypopygium at apex below cut away.

Length, 2·5–3·0 mm.

Redescribed from the following material:—British Museum: England, Chilworth, Surrey, 37 ♀♀, 2 ♂♂, vi.1929 (*C. N. Hawkins*), det. by Waterston as "*pallidipes*," Berkhamsted, Herts, 93 ♀♀, 3 ♂♂, vii.1931 (*R. B. Benson*), Darlington, Durham, 12 ♀♀, viii.1932 (*W. W. Allen*). University Museum

of Zoology, Cambridge: Colchester, 1 ♀, undated (*W. H. or B. S. Harwood*), det. by ? as *callidus*, Hal. Stratford Museum, Fitch collection: a card of three (3 ♀♀), and 1 ♀, all det. as "*pallidipes*." Harwood collection: a card of four (3 ♀♀, 1 ♂), and 1 ♀, all det. as "*pallidipes*." Zoologische Museum, Hamburg: Borstel, 6 ♀♀, v.1896 (*H. Kolbe*), det. by Schmiedeknecht as *pallipes*. Zoologisches Museum der Universität, Berlin: Leipzig, 12 ♀♀, 2 ♂♂, 1.vii.1892 (*Dr. R. Krieger*); Berlin, Jungfernh., 12 ♀♀, 22.vi.1901 (*Dr. G. Enderlein*); Kroning, 7 ♂♂, 1 ?, undated (*Coll. Dr. R. Krieger*). Manchester University Museum: Longton, Preston, 14 ♀♀, 1 ♂, July 1925 (*W. H. Heathcote*), det. by Lyle as "*pallidipes*."

Further material examined:—Zoologisches Museum der Universität, Berlin, Reinhard collection: 4 ♀♀ (one now the type).

Type of *pallipes* in the Reinhard collection, Zoologisches Museum der Universität, Berlin; serial number 26976.

Host. This species was originally described by Reinhard from the Noctuid *Plusia gamma* L., and the Pyralid "*Botys verticalis*," which latter could, I am informed by Mr. W. H. T. Tams, be either *Loxostege verticalis* L., or *Sylepta ruralis* Scop. Of the material from which I have redescribed the species, the series from Chilworth, Borstel, Leipzig, and Berlin, and the single female in the Harwood collection, are all recorded to have been bred from *Plusia chrysitis* L., the card of four in the Harwood collection from *Plusia gamma* L., and the series from Darlington from "*Plusia sp.* almost certainly *Plusia gamma* L." The eight specimens from Kroning are recorded from the Nymphalid *Vanessa*, now *Araschnia, levana* L., while the material from both Longton and Berkhamsted was collected on nettle.

Cocoons white, in a gregarious, oval mass of flocculent white silk to some extent resembling that of *congestus* Nees: but this latter is smaller, yellowish, and with much more firmly and more closely packed silk.

Apanteles reinhardi sp. n.

Apanteles pallidipes Reinhard, Fitch, 1881, *Entomologist*, **14**: 142 (*partim*). Bridgman, 1884, *Entomologist*, **17**: 71. Marshall, 1885, *Trans. ent. Soc. Lond.*, **1885**: 215; 1888, *Spec. Hymen. d'Eur.*, **4**: 478. Bignell, 1901, *Trans. Devon. Ass. adv. Sci.*, **33**: 675. Lyle, 1917, *Entomologist*, **50**: 196.

♀♂. Black; the four anterior legs entirely (save for occasionally some basal darkening on the coxae, and for the black feet), hind coxae commonly with the apical half but more usually with only the extreme apex, the hind trochanters and trochantines, some portions of the hind femora, at least the basal half of the hind tibiae, each joint of the hind tarsus to some extent basally, the palpi, tibial spurs, and basal ventrites, red testaceous; hind tarsi otherwise slightly darkened; hind femora to a varying extent with black or dark markings that are not limited to the distal portions; tegulae red testaceous, testaceous, or even brown; wings perhaps just faintly infumated evenly throughout, the setae coloured; wing-veins (save perhaps at base of wing where they are testaceous), stigma, and metacarp, brown evenly throughout; stigma uniformly opaque.

♀♂. *Head*: face and clypeus throughout minutely punctate (degree 2); facial depressions obviously nearer to apex of clypeus than to the eyes; frons largely smooth; vertex minutely punctate (degree 2); posterior ocelli obviously nearer to each other than to the eyes; flagellum in both ♀ and ♂ rather longer than combined length of thorax and abdomen together with twice the length of the head. *Thorax*: mesonotum strongly regularly punctate (degree 4), the punctures closely placed but distinctly separated, distally the punctation becoming increasingly more minute and more widely placed so that in the apical third the mesonotum is only minutely punctate (degree 3), while immediately anteriorly to the scutellar sulcus it is entirely smooth; disc of scutellum through-

out to some extent indefinitely sculptured; propodeon across the extreme base on each side with a smooth area that is more or less delimited by some strong punctures, otherwise rugose, in the apical angles strongly and coarsely rugose, so coarsely that there are many smooth shining areas between the rugae, and throughout its length the propodeon invariably with a strong, often very strong, median longitudinal carina that is invariably much stronger than, raised above, and distinct from, the rugae. *Wings*: the transverse cubital angled with and noticeably longer than the 1st abscissa of the radial; metacarp with length equal to that of stigma. *Legs*: hind coxae minutely rugose; the hind tibial spurs equal in length, equal to or perhaps rather less than half the length of the basal joint of the hind tarsus. *Abdomen* (fig. 1 *b*): 1st tergite in the basal third excavate, medially in the apical two-thirds tumescent, the whole only slightly evenly turned over, throughout rugose (or longitudinally rugose) except for certain portions of the excavated

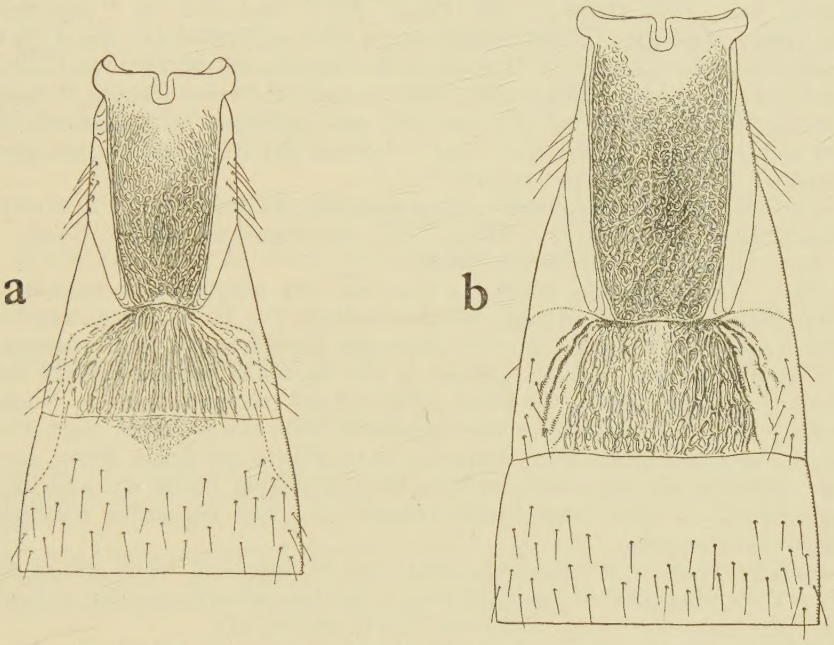

FIG. 1.—The three basal tergites of the female of, *a*, *Apanteles pallipes* Reinh., and *b*, *Apanteles reinhardi* sp. n. × 80.

base which are shining and more or less smooth, the lateral margins strong and up-turned so that there appears to be an often well-marked longitudinal impressed area on each side of the medial longitudinal tumescence; 2nd tergite longitudinally rugose, its sulci broad and always present but not always very definitely delimited; 3rd tergite entirely smooth save in the ♀ for one or two transverse rows of minute punctures in the apical half and some punctures in the basal angles, and in the ♂ for this minute punctation throughout at least the apical half and also in the basal half laterally, much of this punctation quite closely placed (for this portion of the body) but very variable in extent; succeeding tergites with the usual minute punctation; ventrites without median longitudinal suture; ovipositor equal in length to, and the sheaths shorter than, the basal joint of the hind tarsus; hypopygium at apex below cut away. *Length*, 3 mm.

Described from the following material:—BRITISH MUSEUM: Marshall collection, 1 ♀, 1 ♂, det. "*pallidipes*"; Lyle collection, Blackpool, a card of 40 ♀♀, 18.x.1925, ser. no. 4975 (*G. T. Lyle*), Harpenden, 1 ♀, 1929, ser. no. 5233 (*C. T. Gimingham*), all in the Lyle collection under "*pallidipes*"; England.

Preston, Lancs, 16 ♀♀ (one the *type*), 2 ♂♂, 3.xii.1929 (*H. W. Miles*), det. by Waterston as "*pallidipes.*" University Museum of Zoology, Cambridge: England, Preston, Lancs, 4 ♀♀, 3.xii.1929 (*H. W. Miles*). Manchester University Museum: Preston, Lancs, 13 ♀♀, 3 ♂♂, 3.xii.1929 (*H. W. Miles*); Gatley, Cheshire, 2 ♀♀, 2 ♂♂, 15.5.(?8)1932 (*L. Nathan*). Imperial Institute of Entomology: a card of eight (1 ♀, 7 ♂♂), of nine (2 ♀♀, 7 ♂♂), of nine (9 ♂♂), and of ten (10 ♂♂), 15.viii.1932 (*L. Nathan*), det. Nixon as "*pallidipes*"; Scotland, Braemar, Aberdeen, 7 ♀♀, 1 ♂ (*E. A. Cockayne*). Plymouth Museum: Bignell collection: a card of six (6 ♀♀), numbered 1727, and dated Oct. 16th, 1883, and a card of twelve (5 ♀♀, 2 ♂♂, 2 ?), dated Sept. 17th, 1892, all det. as "*pallidipes.*" Norwich Castle Museum: Bridgman collection: 4 ♀♀, 4 ♂♂, ser. no. 797, dated in the register Oct. 10th, 1886 (*J. W. Cross, Esq.*), and det. as "*pallidipes.*" Stratford Museum: Fitch collection: a card of twelve (11 ♀♀, 1 ♂) and a card of six (4 ♀♀, 1 ♂, 1 ?), both with Bignell's serial number 1758, for which his register gives May 24th, 1878, a card of twelve (10 ♀♀, 2 ?), and a card of ten (6 ♀♀, 2 ♂♂, 2 ?), all det. as "*pallidipes*"; 1 ♀, April 28th, 1880, det. both as "*pallidipes*" and "*ruficrus Reinh.*"; and 1 ♀, ser. no. 12, Worcester, 30.ix.78, det. as "*ruficrus.*"

Further material examined:—Zoologisches Museum der Universität, Berlin, Reinhard collection: Wien, 2 ♀♀, determined as *pallipes*, Reinh.

Type deposited in the British Museum.

Host. The series from which the type has been selected, namely that both in the British and the Cambridge Museums collected by H. W. Miles, is recorded to have been bred from the Noctuid, *Mamestra persicariae* L., or *M. oleracea* L., on Chrysanthemum. The six females in the Bignell collection and the single female from Worcester in the Fitch collection are recorded from the Noctuid, *Plusia gamma* L., while the series numbered 1758 are recorded from *Plusia iota* L., and the series from Braemar from *Plusia pulchrina* Haw. Lyle's large cardful is labelled merely to have been bred from *Plusia* sp., and Fitch's single female of 1880 from *Plusia chrysitis* L. The remaining material is without host record.

Cocoons white, in a gregarious, oval mass of flocculent white silk to some extent resembling that of *congestus* Nees: but this latter is smaller, yellowish, and with much more firmly and more closely packed silk.

Fahringer (1935, *Arkiv Zool.*, **27** (A) 12 : 6) has described a variety of *pallipes* with "ganz schwarzer Fühlerbasis," to which he has given the name *nigriscapus*. This description agrees of course with my new species. I have as yet had no opportunity of seeing Fahringer's material.

Apanteles pallipes Reinh. and *reinhardi* sp. n. run together in my key (1932, *Trans. ent. Soc. Lond.*, **80**) to couplet 10, which should be altered as follows:—

10. Propodeon in the greater part rugose . . . . . 10*a*.
Propodeon not so describable . . . . . 10*b*.

10*a*. Mesonotum strongly punctate (degree 4); 2nd tergite longitudinally rugose; Europe . . . . . *reinhardi* Wilkn.
Mesonotum minutely punctate (degree 3); 2nd tergite longitudinally carinulate; Europe . . . . . *pallipes* Reinh.

10*b*. First tergite strongly and regularly constricted to apex; 2nd tergite striate; S. Africa . . . . . *fuscinervis* Cam.
First tergite not so describable; 2nd tergite entirely smooth save for its sulci and for some exceedingly minute punctures; Nigeria, Uganda, Belgian Congo . . . . . *eucosmae* Wilkn.

BEES FROM THE SOLOMON ISLANDS

By T. D. A. Cockerell, F.R.E.S.

The bees recorded below were all received from Mr. R. A. Lever, Government Entomologist at Tulagi. I find no new species, but there are three hitherto undescribed sexes (specimens of which will be sent to the British Museum), and many new localities. All the species are endemic except *Lithurgus albofimbriatus*, *Megachile lachesis* and *Halictus dampieri*.

Palaeorhiza tetraxantha (Ckll.).

♀. Tulagi, July 23, 1934. ♂. Karamula, Russell Is., Sept. 20, 1934. The male is new. The narrowed face is yellow, without black bands; scape largely yellow in front; front femora and tibiae yellow, but middle and hind ones entirely red. The specimen has the four stripes on mesothorax red, but apparently this is due to cyanide.

Crocisa gemmata Ckll.

Lunga, Guadalcanal, June 1935. Tulagi, June 1932.

Trigona sapiens Ckll.

Halaita, Nggela, March 11, 1934.

Coelioxys dispersa Ckll.

Lunga, ♂, April 1932, ♀, March 5, 1935. The female is new. It has the emarginate scutellum of the group of *C. albolineata* Ckll., but differs from that species by the thinly pubescent clypeus and supraclypeal area, these parts appearing black, contrasting with the dense white hair at sides of face; and by the more coarsely and closely punctured mesothorax. The end of the abdomen is nearly the same, but the last sternite is broader in *C. dispersa*.

Nomia froggatti Ckll.

♂♂ from Ruavatu, Guadalcanal, May 3, 1934, and Hagalu, Nggela, Oct. 28, 1934. This sex is new. Middle of clypeus with a shining keel; tongue linear but short, but mentum very long, so that the mouth-parts can be greatly extended, to a distance more than equal to length of head; scutellum bilobed; postscutellum with two strong spines; abdominal bands rufous; hind femora enormously swollen, humped, with short reddish hair; hind tibiae very thick and broad, light red, with a large black saddle, apex produced to a broad truncation; hind tarsi clear red, black at apex. Differs from *N. pulchribalteata* Cam. by the black tegulae, rufous hair on hind part of thorax and base of abdomen, more massive hind femora, light red hind tarsi, etc. The hind trochanters are produced to form strong conical spines.

Lithurgus fortis Ckll.

Kaukau, Guadalcanal, Aug. 22, 1934; Kiva Kiva, San Cristobal, May 8.

Lithurgus albofimbriatus Sichel.

Sikaiana Atoll, March 23, 1936. ♀. This agrees with one from Tahiti. Perkins and Cheesman made this a synonym of *L. scabrosus* Smith, and this may be correct. I find, however, that it has a strong groove down the middle of the scutellum, which is lacking in *L. scabrosus* as I have it from the Philippine Is. (Mindanao), and is also lacking in the Australian *L. atratiformis* Ckll. I find that the specimens from Vavau, Tonga, collected by my wife, lack the groove, and go with *L. scabrosus*, though I formerly recorded them as *L. albofimbriatus*.

Megachile lachesis Smith.

Suu, Malaita, ♀, Jan. 1932. Tulagi, June 17, 1934, ♂. The colour of the hair on face and front of the male varies. It is reddish fulvous on the face of the Tulagi one, but white on one from the Bismarck Archipelago.

Megachile shortlandi Ckll.

♂♂ from Lunga, Guadalcanal, Feb., April and November 1932. "Cuts Cassia and Crotalaria leaves." The narrow abdominal bands vary to white, and are entire in fresh specimens.

Halictus exterus Ckll.

Tulagi, ♀, March 15, 1934. The brilliantly shining mesothorax and scutellum vary from golden green to bluish green; the tibiae and tarsi are red.

Halictus dampieri Ckll.

Tulagi, both sexes, Aug. and Oct., 1932. Two males are labelled "Cocos." The abdomen of the female is brassy green. This is a common Queensland species, and has probably been introduced into the Solomon Islands by human agency.

Book Notice.

M. Hering, *Die Blatt-Minen Mittel- und Nord-Europas.* 5–6 Parts with 7 pls., and many text figures. Subscription price RM. 12.00 per part.

Lieferung 1. pp. ix–xii + 112. 1935.
Lieferung 2. pp. 113–224, 2 pls. 1936.
Verlag G. Feller, Neubrandenburg.

In this work Prof. Hering aims to give keys to the identification of all insect larvae, of whatever order, that make mines on leaves.

Part 1 opens with the descriptions of 5 new species (a description of a further species is given in the text). This is followed by an introduction in which it is stated that a decade and a half have gone to the preparation of the work, during which time some 5,000 species have been bred from mines. The major part of the work follows, being a series of keys arranged under the food-plants of the insects concerned, Part 1 covering *Abies* to *Bromus* and Part 2 *Brunella* to *Filipendula*.

FOUR SPECIES OF CERATOPOGONIDAE (DIPTERA) FROM THE WINGS OF INSECTS

By Dr. J. W. S. Macfie.

Communicated by Dr. F. W. Edwards, F.R.E.S.

Three of the insects described were sent to me by Mr. J. Cowley, to whom I have pleasure in expressing my thanks not only for the opportunity of examining these particular specimens, but also for the interest he has shown in the occurrence of such little parasites on dragonflies, and the trouble he has taken, searching through his collection, to obtain additional examples. The first two, both of the genus *Pterobosca*, were found by Mr. Cowley when sorting a collection of about 650 Odonata from Hainan Island, made by Mr. J. L. Gressitt last year; the third, a species of *Lasiohelea*, was found on a dragonfly captured in Peru by Mr. G. G. Klug.

With regard to the specimens described by me in a previous paper (1936, *Proc. R. ent. Soc. Lond.* (B) **5** : 62–64), Mr. Cowley informs me that the species of *Lestes* which was host of one of the specimens of *Pterobosca paludis* was *L. sponsa*, not *L. dryas* as at first stated; and that the determination of the host of *Pterobosca aërobates* as *Idionyx intricata* has now been confirmed by Lt.-Col. Fraser, M.D., I.M.S., who has compared the specimen with his types. The locality in which this specimen was taken should be given merely as "Khasi Hills, Assam," as there is some doubt whether it actually came from Shillong. The remaining specimen is from a Tipulid.

Key to the species of Pterobosca *at present known.*

1. Legs without claws . . . . . 2.
   Legs with claws . . . . . 4.
2. Large species : palp without pit . . . . . *aeschnosuga* (de Meij.).
   Smaller species : palp with pit . . . . . 3.
3. T.R. about 3·7 : one spermatheca . . . . . *adhesipes* Macfie.
   T.R. about 3·2 : two spermathecae . . . . . *mollipes* Macfie.
4. Second radial cell obliterated . . . . . 5.
   Second radial cell not obliterated . . . . . 7.
5. 4th tarsal segment very small, about half length of 5th . . . *ariel* Macfie.
   4th tarsal segment larger, about two-thirds or three-quarters length of 5th 6.
6. Claws slender, not expanded at base . . . . . *latipes* sp. n.
   Claws stouter, expanded at base . . . . . *fidens* sp. n.
7. Basal segments of antennae not much flattened, sub-spherical. *odonatiphila* Macfie.
   Basal segments of antennae flattened, disc-shaped . . . . . 8.
8. Claws with tips deeply cleft . . . . . *paludis* Macfie.
   Claws with tips not cleft . . . . . *aërobates* Macfie.

Pterobosca latipes sp. n.

A very dark brown species resembling *Pterobosca ariel* Macfie in having the second radial cell on the wing obliterated, but differing from it in having the fourth tarsal segments of the legs larger.

♀. Length of wing, about 0·9 mm.; greatest breadth, about 0·35 mm.

Head very dark brown. Eyes bare. Proboscis short : mandibles armed with about ten

small teeth. Palpi dark brown, the tip paler : third segment somewhat inflated, furnished about middle with a deep pit, fifth tapering; lengths of last three segments about 10, 6, and 9 units * respectively. Antennae dark brown : segments 3–9 flattened, broader than long, measuring from about 6 by 9 to 4 by 7 units; segments 10–15 more elongate, 10–14 successively a little longer, from about 8 by 7 to 10 by 7 units, the last segment about 16 by 7 units, ending in a nipple-like process. The combined lengths of segments 3–9 and 10–15 about 30 and 61 units respectively. *Thorax* very dark brown, rather sparsely clothed with stiff, shortish, dark brown hairs. Scutellum and postscutellum very dark brown, the former bearing dark bristles and hairs most of which are situated on the middle third. *Wings* unadorned, but veins enclosing radial cells somewhat infuscated. Macrotrichia fairly abundant. Bare areas along veins distinct. No scales. Costa extending slightly beyond middle of wing. Both radial cells obliterated. Fork of *Cu* at about same level as middle of second radial cell. Halteres with dark brown knobs. *Legs* dark brown, but tarsal segments decidedly paler than rest. T.R. about 3·2. Fourth tarsal segments not very small, about three-quarters length of fifth. Claws (fig. 1 (*b*)) slender, curved, with pointed but not cleft tips. Empodium large, with about 11 rays. *Abdomen* (including cerci) very dark brown; without scales. Spermathecae two, very highly chitinised, oval, sub-equal, about 52 μ by 41 μ; the commencement of the duct hardly at all chitinised.

China : Kiungchow, Hainan Island, 27.v.1935, 1 ♀ (*J. L. Gressitt*). Found attached to the underside of the base of the right hind-wing of a female specimen of *Potamarcha obscura* Rambur.

This insect resembles *P. ariel* Macfie (Moluccas) in which also the second radial cell of the wing is obliterated, but may be distinguished from that species by the form of the fourth segment of the tarsi which is larger, about three-quarters instead of only about one-half the length of the fifth segment.

Pterobosca fidens sp. n.

This insect, in which also the second radial cell of the wing is almost obliterated, a mere slit, resembles the preceding species in almost every respect. The description given above, and the measurements, apply equally to it. But the claws (fig. 1 (*a*)) are much stouter, and are expanded at the base; and the empodium is rather smaller, with only about 8 rays.

China : Nodoa, Hainan Island, 31.vi.1935, 1 ♀ (*J. L. Gressitt*). Found attached to the base of the wing of a female specimen of *Orthetrum pruinosum neglectum* Ramb.

Forcipomyia (Lasiohelea) intrepida sp. n.

A small, dark brown species, without scales; closely resembling the insect described in 1932 (perhaps unjustifiably) as *L. samoensis* Edw., but with two spermathecae.

♀. Length of wing, about 0·74 mm.; greatest breadth, about 0·28 mm.

Head very dark brown. Eyes contiguous above, bare so far as can be seen without treatment with caustic. Palpi dark brown : third segment with small pit anteriorly, lengths of last three segments about 6, 4, and 7 units respectively. Antennae dark brown : basal segments broader than long, 4–10 from about 3 by 7 to 5 by 7 units; segments 11–15 elongate, 11–14 from about 8 by 6 to 12 by 5 units, 15 longer, about 21 by 6 units, ending in a finger-like process. The combined lengths of segments 3–10, 4–10, and 11–15 about 27, 19, and 65 units respectively. *Thorax* uniformly very dark brown; with rather scanty

* The unit used is 3·7 μ.

hairs, and no scales. Scutellum and postscutellum very dark brown, the former bearing a few bristles and hairs. *Wings* as in *L. samoensis*. Both radial cells practically obliterated, slit-like. Halteres with dark brown knobs which, however, contain a paler substance.

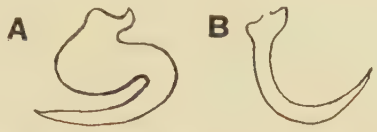

Fig. 1.—Claw of hind leg, lateral view, of (*a*) *Pterobosca fidens* sp. n., and (*b*) *P. latipes* sp. n.

Legs almost uniformly dark brown; without scales. T.R. 3. Fourth tarsal segments subcylindrical, about same length as fifth. Claws small, about half length of fifth tarsal segment, curved, not bifid at tips. Empodium rather small and delicate. *Abdomen* dark brown, with few hairs and no scales. Spermathecae two, well chitinised, oval, sub-equal, total length about 40 μ, and greatest breadth about 30 μ: duct chitinised for only a very short distance.

Peru: Iquitos, Jan. 1936, 1 ♀ (*G. G. Klug*). Found attached to the upper surface of the right fore-wing of a female specimen of *Erythrodiplax erratica* Erichson.

This insect resembles closely *L.* (?) *samoensis* Edw. and *L. pennambula* Macfie, the two other species of the genus which have been found attached to the wings of dragonflies. From the former it differs most notably in having two spermathecae instead of only one, and from the latter in being much darker in colour, and in having the T.R. 3 instead of about 3·5.

Forcipomyia (Lasiohelea) tipulivora sp. n.

A rather small, darkish brown species, bearing scales in addition to bristles and hairs, with the basal segments of the antennae broader than long, and with the T.R. about 2·8.

♀. Length of wing, about 1·3 mm.; greatest breadth, about 0·5 mm.

Head dark brown. Eyes broadly contiguous above; bare. Palpi dark brown: third segment without pit, but bearing numerous sensory hairs on almost whole length of inner aspect; lengths of last three segments about 15, 8, and 9 units * respectively. Antennae dark brown: basal segments broader than long, segments 4, 9, and 10 measuring about 7 by 8, 6 by 8, and 8 by 8 units respectively; 11–15 elongate, 11–14 subequal, about 19–21 by 8 units, 15 longer, about 27 by 8 units, and ending in a nipple-like process. The combined lengths of segments 3–10, 4–10, and 11–15 about 55, 50, and 110 units respectively. *Thorax* dark brown, unadorned; bearing scales as well as bristles and hairs. Scutellum and postscutellum dark brown, the former bearing 20–30 bristles and hairs. *Wings* unadorned. Macrotrichia numerous, scale-like (especially over radial areas), leaving no bare areas along veins. Venation normal. Costa extending about three-fifths length of wing. Second radial cell not so long and narrow as in *L. lefanui*. Halteres with dark brown knobs. *Legs* brown or yellowish-brown, bearing scales as well as bristles and hairs. T.R. 2·8. Claws small, strongly curved, less than half length of fifth segment, with bifid tips. Empodium normal. *Abdomen* brown, much paler than thorax, bearing narrow scales in addition to bristles and hairs. Spermathecae two, well chitinised, subspherical,

* The unit used is 3·7 μ.

sub-equal, diameter about 50–55 μ; somewhat produced proximally, the commencement of the duct chitinised for a short distance, about 7 μ.

Dutch New Guinea: Mt. Cyclops, 3,500 ft., March 1936 (*Miss L. E. Cheesman*). On thorax of *Tipula* sp. cf. *de meijerei* Edw. taken at light.

So far as I am aware the only other record of a Ceratopogonid attacking a Tipulid is that of Edwards (1933)* who described a midge from N. Borneo found with its proboscis inserted into the scutellum of a specimen of *Trentepohlia pennipes* O.S. For this insect he proposed the name *Lasiohelea equitans*. It is a much smaller species than the one described above, the wing length only 0·65 mm., and differs also in a number of other characters, *e.g.* in having the last five segments of the antenna together slightly shorter than the basal eight, and the second radial cell on the wing longer and narrower, almost as in *L. lefanui*. No mention of scales is made in the description of *L. equitans*, but so far as can be seen in the type (which is preserved dry) small narrow scales are present at least on the tarsi.

* In the collection of the British Museum there is, however, another example of a *Lasiohelea* on a Tipulid. The specimen was taken in Nigeria, West Africa, and has its proboscis inserted into the thorax of a specimen of *Ceratocheilus longirostris* Wesché. It is a small insect, wing length about 0·8 mm., costa extending about two-thirds length of wing, and basal segments of antennae quite short. Without dismounting the specimen, which is clearly different from the one described above, it is not possible to differentiate it from other West African species. Its description may therefore be left until further specimens are available for study.

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